**Template PUE Survey Questions**

Adapted from Santana et al. (2020)[[1]](#footnote-0) with modifications made by Clean Technology Hub

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Note: Red asterisk (\*) indicates a question is required.

# **Community Stakeholder Survey Questions**

## Community location questions

1. Enumerator\*
   * Select from list of enumerators
2. Communitysite name\*
   * Select from list of sites
3. Community site coordinate location (collected via phone GPS)\*
4. If there are no GPS capabilities, please enter the latitude and longitude.
5. What level of cell service is available from this location?\*
   * no cell service available
   * SMS/voice service only
   * slow data speeds available - can send Whatsapp but little else
   * 3g+ data connection
   * can browse internet
6. Is there a cell tower (mast) visible or within walking distance of the community?\*
   * Yes
   * No

|  |
| --- |

## Respondent questions

1. Do you consent to be interviewed for the purposes of this study?\*
   * Yes
   * No
2. [If No] Record the reason from the following and abort the survey
3. [If Yes] Full name of respondent\*
4. Gender of respondent\*
   * Male
   * Female
   * Diverse
5. Respondent phone number
6. Select the respondent type that best describes the respondent. (Maximum of two responses allowed.\*
   * Community head/secretary
   * Community Champion
   * Agricultural Processor
   * Farmer
   * Agricultural Trader

## 

## PUE profile questions

1. What are the principal economic activities in the community?\*
   * Fisheries
   * Agribusinesses
   * Agricultural processing
   * Logging
   * Mining
   * Retail
   * Other (please specify)
2. Which processing activities are conducted in this community?\*
   * Food: Groceries
   * Food: Fruits/vegetables
   * Food: Restaurant
   * Food: Bar/Tea seller
   * Food: Bakery
   * Food: meat seller/butcher
   * Food: Drinks shop
   * Food: Other
   * Retail: Clothes and accessories
   * Retail: Electronics shop
   * Retail: Medical
   * Retail: Agricultural
   * Retail: Other
   * Trades: Beauty/Hair
   * Trades: Tailoring
   * Trades: Carpentry/Furniture making
   * Trades: Metalworks
   * Trades: Bicycle Repair
   * Trades: Car / Motorbike
   * Repair Trades: Mechanic
   * Repair Trades: Other
   * Digital: Cybercafé
   * Digital: Cinema / Betting
   * Digital: Mobile / Electronics Repair
   * Digital: Photostudio
   * Digital: Other
   * Agricultural: Mill/Thresher/Grater
   * Agricultural: Chilling/Coldstorage
   * Agricultural: Other
   * Other
3. Which of the following activities are undertaken in the community for commercial purposes?\*
   * cold storage
   * drying
   * grain flour milling
   * grating/grinding
   * meat/fish smoking
   * milk chilling
   * parboiling
   * peeling
   * rice milling
   * threshing/shelling
   * water circulation (fish pond pumping)
   * Other (please specify)
4. Which crops/livestock are produced by more than five farmers in this community? (select all that apply)\*

* Cassava
* Yam
* Maize
* Sorghum
* Rice
* Millet
* Groundnut
* Cowpea
* Soybean
* Cocoa
* Oil Palm
* Milk
* Fish
* Others (please specify)

1. For each activity selected, input the approximate **number** of people in the community working primarily in this activity.\*
2. For each activity selected, input the approximate **percentage** of the community working primarily in this activity\*
3. For each activity selected, input the average amount of output processed per month for the typical enterprise (in bushels, kg, etc.)\*
4. What activities have the greatest use of electric-powered equipment (as opposed to manual or diesel-powered equipment) within the community?\*
5. On a typical day, which power sources do businesses in the community use?\*
6. For each activity selected, input the estimated average amount of fuel consumed per month for the most energy-consuming activity\*
7. What types of vehicles are most commonly used to transport agricultural products to markets in the community?\*
   * Animals
   * Two-wheelers (motorcycles)
   * Three-wheelers (keke na pepe)
   * Passenger cars
   * Others (please specify)
8. Notes on productive use

**If fisheries is selected:**

1. Is there a need for cold storage of fish?\*

**If agricultural processing facilities or agribusinesses is selected:**

1. Is there a need for agricultural processing equipment?\*
2. Is there a need for cold storage of meat?\*
3. Do any farmers in %community\_name% use irrigation?\*
   * Yes
   * No
4. How are fields irrigated in %community\_name%?\*
   * Using pumps
   * Manually (e.g. watering can)
   * Natural methods (e.g. water channeling
   * into farm, ditches)
   * other irrigation method
5. How are irrigation pumps typically powered in %community\_name%? Select all that apply
   * petrol
   * diesel
   * electricity from grid or minigrid
   * solar panels on the pumps
   * Other (please specify)
6. Is there a need for additional pumping for irrigation?\*
   * What is the average cost of running a diesel water pump for the average farm-owner per planting season?
   * How many days a year is irrigation needed for the typical farmer?
   * How many hours a day is irrigation needed for the typical farmer?
7. In which principal economic activities is there a common use of electricity-powered equipment (as opposed to Petrol/diesel powered equipment)?\*
8. Notes on productive-use activities in the community

## 

## Community organisation questions

1. Which of the following community organizations are located in the community?\*
   * Schools
   * Pharmacies
   * Health Clinics
   * Christian Churches
   * Mosques
   * Agricultural Cooperatives
   * Youth Groups
   * Community Development Association
   * Other 1 (please specify)
   * Other 2 (please specify)
   * Other 3 (please specify)
2. How many agricultural cooperatives are there in the community?\*
3. How many members are there in these agricultural cooperatives?\*
4. Which of the following sources of finance are available for members of the community?\*

* Microfinance bank
* Savings and Loan Association
* Deposit Money Bank
* Development bank
* Others (please specify)

## Offtaker capacity questions

1. Are there markets nearby?\*
   * Yes, monthly
   * Yes, weekly
   * No
2. Do farmers have enough offtakers to purchase their produce?\*
   * Yes
   * No
3. What are the main challenges farmers face in selling off their produce?\*
4. Do agroprocessors have enough offtakers to purchase their processed goods?\*
   * Yes
   * No

# **Farmer Survey Questions**

## 

## Community location questions

1. Enumerator\*
   * Select from list of enumerators
2. Communitysite name\*
   * Select from list of sites

## Respondent questions

1. Do you consent to be interviewed for the purposes of this study and to have photos taken of yourself and your farm or business, where applicable?\*
   * Yes
   * No
2. [If No] Record the reason from the following and abort the survey
3. [If Yes] Full name of respondent\*
4. Gender of respondent\*
   * Male
   * Female
   * Diverse
5. Respondent phone number
6. Is this interview being conducted where crops are grown?\*
   * Yes
   * No

[Enumerator: If convenient, relocate the interview to a location nearer to the field/pond and change answer to the previous question.]

1. If this is close to the farm field, record GPS coordinates:\*
2. If this interview is not conducted near the farm fields, how many minutes would it take to walk there from the city center?\*
   * 1 - 15 minutes
   * 15 - 30 minutes
   * 30 - 45 minutes
   * more than 45 minutes
3. Which of the following are major crops that you produce and sell to make money?\*
   * Cassava
   * Maize
   * Rice
   * Sorghum
   * Cowpea
   * Soybean
   * Cashew
   * Sheanut
   * Cotton
   * Cocoa
   * Farmed Fish
   * Milk
4. Are there any other major crops that you produce and sell that I've missed?\*
   * Carrots and turnips
   * Cashew nuts with shell
   * Cassava
   * Chillies and peppers dry
   * Chillies and peppers green
   * Cocoa beans
   * Coconuts
   * Coffee green
   * Cotton lint
   * Cottonseed
   * Cow peas dry
   * Cows milk
   * Fonio
   * Fruit citrus
   * Fruit fresh
   * Garlic
5. About how many hectares of land do you use for %f\_crop\_roster% on this farm?\*
6. Is %f\_crop\_roster% affected by the seasons? If so, how many harvest seasons do you experience per year?\*
   * This activity is not seasonal
   * 1 harvest (busy) season per year
   * 2 harvest (busy) seasons per year
7. What is the typical quantity you harvest in a year?\*
8. What month do you plant for the first season?\*
   * January
   * February
   * March
   * April
   * May
   * June
   * July
   * August
   * September
   * October
   * November
   * December
9. What month do you harvest for the first season?\*
   * January
   * February
   * March
   * April
   * May
   * June
   * July
   * August
   * September
   * October
   * November
   * December
10. What month do you plant for the second season?\*
    * January
    * February
    * March
    * April
    * May
    * June
    * July
    * August
    * September
    * October
    * November
    * December
11. What month do you harvest for the second season?\*
    * January
    * February
    * March
    * April
    * May
    * June
    * July
    * August
    * September
    * October
    * November
    * December
12. What is the typical quantity you harvest in this first season?\*
13. What is the typical quantity you harvest in this first season?\*
    * kilogram
    * bag
    * tonne
    * liter
    * pick-up truck
    * large trailer load
    * other
14. Record units for the quantity reported in the previous question.\*
15. What size of bag are you referring to?\*
16. What is the typical quantity you harvest in this second season?\*
17. Of the %f\_harvest\_qty% %f\_harvest\_unit%s of %f\_crop\_roster% you harvest, how many %f\_harvest\_unit%s are spoiled before it can be consumed, processed or sold?\*
18. Of the %f\_harvest\_qty% %f\_harvest\_unit%s of %f\_crop\_roster% you harvest, how many %f\_harvest\_unit%s are consumed within your household?\*
19. How is this crop stored post-harvest?\*
20. Do you know what causes this %f\_pct\_spoil%% of the crop to spoil?\*
21. What change do you think could reduce these losses?\*

## Thresher questions

1. How do you typically thresh %f\_crop\_roster%?\*
   * Mechanically thresh for a fee
   * Hire labor to manually thresh
   * Manually thresh with friends/family at no
   * charge
   * Other
2. About how much money do you spend per %f\_crop\_roster% harvest on this labor?\*
3. About how much money do you spend on mechanical threshing services per harvest?\*
4. Which of the following problems do you encounter during the %f\_crop\_roster% threshing process?\*
   * It is expensive
   * Contamination of paddy rice by debris lowers price
   * Broken grains lower price
   * Hired labor steals some of the paddy during threshing
   * Other (please specify)
5. Please rate your agreement with the following: If the thresher were fixed in place in the community center, I would be willing to transport my harvested %f\_crop\_roster% from the field to be threshed.\*
   * strongly disagree
   * neutral, depends on price
   * strongly agree
6. In what form do you sell this crop most often?\*
7. Would you like to grow more %f\_crop\_roster% to sell more %f\_sale\_product% to make more money?\*
   * Definitely no
   * Unsure
   * Definitely yes
8. What is limiting your ability to grow your capacity for %f\_crop\_roster% the crops we've discussed? Choose the following in order of importance:\*
   * Access to financing (loans)
   * Lack of market access (can't sell more
   * that I already do)
   * Lack of know-how or experience (e.g.
   * needs further education)
   * Lack of reliable electricity for machines
   * (currently owned or not)
   * Lack of cultivation machinery
   * Other (please specify)
9. Why aren't you able to sell all your %f\_sale\_product%?\*
   * Cannot transport to market to sell
   * Cannot find a good price
   * Cannot process my crop into the sale
   * product
   * Cannot find an offtaker in my community
10. Who do you sell to?\*
    * local trader or processor
    * market in my community
    * market in a different community
11. low end of sale price range:\*
12. high end of sale price range:\*
13. Price of %f\_sale\_price\_high% is in terms of Naira per…\*
    * kilogram
    * bag
    * tonne
    * liter
    * pick-up truck
    * large trailer load
    * other
14. If "Naira/Other", please specify units in full.
15. If Naira/bag, what size of bag are you referring to?
16. Are parts of your %f\_crop\_roster% fed to animals?\*
    * Yes
    * No
17. Do you make money from parts of %f\_crop\_roster% fed to animals?\*
    * I do not make any money
    * I do not charge to take it, but people
    * give me small tips
    * I package and sell this feed for profit
18. What %f\_crop\_roster% part do you sell for animal feed?\*
19. How much do you sell this %f\_feed\_form% for?\*
20. Do you use sun or open-air drying?\*
    * No, I always use a mechanical dryer
    * Yes, I use open-air drying at least some
    * of the time
21. How frequently do you experience drying problems during the busy season?\*
    * never
    * one or two days per season
    * three to ten days per season
    * ten to twenty days per season
    * I am not able to sufficiently air-dry my crops during the busy season
22. If involved in aquaculture, what is the species type?\*
23. Do you use irrigation on your fields?\*
    * Yes
    * No
24. On your farm, how are fields irrigated?\*
    * Using pumps
    * Manually (e.g. watering can)
    * Natural methods (e.g. water channeling
    * into farm, ditches)
    * other irrigation method
25. On your farm, how are irrigation pumps powered?\*
    * petrol
    * diesel
    * electricity from grid or minigrid
    * solar panels on the pumps
    * Other
26. How easy or difficult is it for you to access extension services, or business development services, if you need help improving your farm operations or expanding to new business?\*
    * Very difficult
    * Difficult
    * Neither easy nor difficult
    * Easy
    * Very easy
    * I don't know
27. Who provides these extension or support services? Name specific organizations if you know them.\*
28. Are you a member of a farmer's group or a cooperative (co-op)?\*
    * Yes
    * No
29. Please name the co-ops or associations of which you are a member.
30. Which of the following do these coops or associations provide you?\*
    * Financial services including credit and
    * thrift
    * Extension services
    * Improved inputs
    * Others

Note: Red asterisk (\*) indicates a question is required.

# **Enterprise PUE Survey Questions**

## Community location questions

1. Enumerator\*
   * Select from list of enumerators
2. Communitysite name\*
   * Select from list of sites

| [EUMERATOR: Please Show ID card to the facility member and request to meet the head of the facility. If the facility head is not available, ask for an adult facility employee who has full knowledge about the facility situation and ideally the energy supply system.] |
| --- |

## Respondent questions

1. Do you consent to be interviewed for the purposes of this study and to have photos taken of yourself and your farm or business, where applicable?\*
   * Yes
   * No
2. [If No] Record the reason from the following and abort the survey
3. [If Yes] Full name of respondent\*
4. Gender of respondent\*
   * Male
   * Female
   * Diverse
5. Which of the following describe the respondent's relationship to the enterprise?\*
   * Owner
   * Employee or manager (not owner)
   * Other
6. Is this interview being conducted at the location of the enterprise?\*
   * Yes
   * No

[Enumerator: If convenient, relocate the interview to a location nearer to the processing site/equipment and change answer to the previous question.]

1. If this is the site where processing takes place, record GPS coordinates (collected via phone GPS)\*
2. If there are no GPS capabilities, please enter the latitude and longitude.
3. Respondent phone number

## PUE profile questions

1. Which of the following describes the respondent business type?\*
   * Household with Business in-home
   * Small Business
   * Medium Business/Cottage Industry
   * Other
2. What sector does the respondent do business in?\*
   * Fisheries
   * Agribusinesses
   * Agricultural processing facilities
   * Grain mills
   * Logging
   * Mining
   * Other (please specify)
3. What is the respondent’s business engaged in?\*
   * Food: Groceries
   * Food: Fruits/vegetables
   * Food: Restaurant
   * Food: Bar/Tea seller
   * Food: Bakery
   * Food: meat seller/butcher
   * Food: Drinks shop
   * Food: Other
   * Retail: Clothes and accessories
   * Retail: Electronics shop
   * Retail: Medical
   * Retail: Agricultural
   * Retail: Other
   * Trades: Beauty/Hair
   * Trades: Tailoring
   * Trades: Carpentry
   * Trades: Metalworks
   * Trades: Bicycle Repair
   * Trades: Car / Motorbike
   * Repair Trades: Other
   * Digital: Cybercafé
   * Digital: Cinema / Betting
   * Digital: Mobile / Electronics Repair
   * Digital: Photostudio
   * Digital: Other
   * Agricultural: Processing
   * Agricultural: Other Other
4. [If Agricultural: Processing] What processing activity does the enterprise engage in? (select all that apply)\*
   * drying
   * grain flour milling
   * grating/grinding
   * meat/fish smoking
   * milk chilling
   * parboiling
   * peeling
   * rice milling
   * threshing/shelling
   * water circulation (fish pond pumping)
   * Other (please specify)
   * none

## 

## Enterprise characteristics questions

1. Which days does your enterprise usually operate? (Select multiple)\*
   * Monday
   * Tuesday
   * Wednesday
   * Thursday
   * Friday
   * Saturday
   * Sunday
   * Everyday
2. In what year did the enterprise open?\*
3. Is the enterprise open 24 hours?\*
4. What time does your enterprise usually open?\*
   * 5 am
   * 6 am
   * 7 am
   * 8 am
   * 9 am
   * 10 am
   * 11 am
   * 12 pm (Noon)
   * 1 pm
   * 2 pm
   * 3 pm
   * 4 pm
   * 5 pm
   * 6 pm
   * 7 pm
   * 8 pm
5. What time does your enterprise usually close?\*
   * 5 am
   * 6 am
   * 7 am
   * 8 am
   * 9 am
   * 10 am
   * 11 am
   * 12 pm (Noon)
   * 1 pm
   * 2 pm
   * 3 pm
   * 4 pm
   * 5 pm
   * 6 pm
   * 7 pm
   * 8 pm
6. How would you describe the roof of the enterprise building?\*
   * Plastic/canvas
   * Reed/bamboo
   * Wood and mud
   * Wood and thatch
   * Asbestos
   * Corrugated iron sheet
   * Bricks
   * Stone and cement
   * None
   * Other
7. During which months is business good, or is it the same all year?\*
   * January
   * February
   * March
   * April
   * May
   * June
   * July
   * August
   * September
   * October
   * November
   * December
   * Same over the whole year
   * don't know
8. How many of the following items does the enterprise and owner have in total?\*
9. How many [bicycle] does the enterprise / owner have in total?\*
10. How many [Motorbike / scooter] does the enterprise / owner have in total?\*
11. How many [Car / van / truck] does the enterprise / owner have in total?\*
12. How many full-time employees work here (excluding owner)?\*
13. What is the average monthly revenue of this enterprise in Naira?\*
14. How much do you spend on salaries per month in total (Naira)?\*
15. What is the gender of the enterprise owner?\*
    * Male
    * Female
    * Diverse
16. What is the age of the enterprise owner?
17. How many years of business experience does the enterprise owner have?\*
18. What is the highest level of education achieved by the enterprise owner?\*
    * N1
    * N2
    * P1
    * P2
    * P3
    * P4
    * P5
    * P6
    * JS1
    * JS2
    * JS3
    * SS1
    * SS2
    * SS3
    * Lower 6
    * Upper 6
    * Teacher training
    * Vocational/technical
    * Modernschool
    * NCE
    * Poly/prof (ND/HND)
    * 1st degree
    * Higher degree
    * Quranic Integrated
    * Quranic Adult education
    * OND HND
    * Bachelor
    * Master
    * PhD
    * None
    * Other
    * Don't know

## Enterprise finance questions

1. Does the enterprise/owner have a bank account at a formal institution?\*
   * Yes
   * No
2. [If yes] At which institution is this account or savings?
3. Does the enterprise/owner use informal savings groups (adashi/esusu/ajo)?\*
   * Group savings (rotational)
   * Group savings (one-time disbursement)
   * Other
   * Don't know
4. If you can get a loan/credit, what are the sources of credit/loans?\*
   * Commercial/government bank
   * Cooperative credit union/SACCO
   * Microfinance institution
   * Rural bank
   * State loan
   * NGO
   * Business firm
   * Employer
   * Moneylender/Shylock
   * Shop
   * Relative/friend/neighbor
   * Mobile money services
   * Cannot get a loan/credit
   * Other
5. What is the maximum amount of loan/credit you think you would be able to get if you apply within the next 3 months? (in naira)\*
6. Does this enterprise have a mobile money account (e.g. Opay, Firstmonie, Paga, MoMo)?\*
   * Yes
   * No
   * Don’t know
7. Have you used the account in the past 90 days?\*
   * Yes
   * No

## Electricity access questions

1. Please state all sources of electricity and lighting in this enterprise.\*
   * National grid connection
   * Local minigrid
   * Solar home system
   * Solar lantern
   * Electric generator
   * Rechargeable battery
   * Dry cell battery / torch
   * Biogas lamp
   * LPG lamp
   * Gasoline lamp
   * Kerosene/ paraffin lamp
   * Oil lamp
   * Candle
   * Open fire
   * None
   * Other (please specify)
   * Don't know
2. In a typical day in the past 6 months, which of the following electricity sources does the enterprise use? (Select all that apply)\*
   * National grid connection
   * Local minigrid
   * Solar home system
   * Solar lantern
   * Electric generator
   * Rechargeable battery
   * Dry cell battery / torch
   * None
   * Other (please specify)
   * Don't know
3. How many hours per day do you use each source of electricity?\*
4. [If selected solar] What is the size of the main solar device solar panel (in Watts)?
   * What is the size of the main solar device battery (in Amp-hours)?
5. Please rate your overall satisfaction with the level of power you are getting from these power sources?\*
   * Very UNsatisfied
   * UNsatisfied
   * Neither satisfied nor unsatisfied
   * Satisfied
   * Very satisfied
6. Electricity bill from the national grid (N/month)\*
7. Do you own a generator, or borrow a line from your neighbor?\*
   * Yes
   * No
8. How many electric generators do you regularly use?
9. What is the total size of all generators (in kW/kVA)?
10. If possible please take a picture of the Generator nameplate, including power rating, if available.
11. What is the price of diesel fuel in %community\_name%?
12. What is the price of petrol fuel in %community\_name%?
13. What was the total purchase cost (in Naira) for all generators?
14. What are the typical monthly costs (in Naira) for using electricity from the generator? (ENUMERATOR: if generator is owned: ask for monthly fuel and maintenance costs ; if a power line is received from a neighbor's generator: ask for cost of monthly bill)
15. How much do you agree that the cost for using the generator is affordable?\*
    * Not at all
    * Not very much
    * Somewhat
    * A great deal
    * Prefer not to say
16. How much do you agree that your monthly bill for the NATIONAL GRID is affordable?\*
    * Not at all
    * Not very much
    * Somewhat
    * A great deal
    * Prefer not to say

## PUE equipment questions

1. [If Agricultural: Processing] For which of these activities do you use a machine?\*
   * cold storage
   * drying
   * grain flour milling
   * grating/grinding
   * meat/fish smoking
   * milk chilling
   * parboiling
   * peeling
   * rice milling
   * threshing/shelling
   * water circulation (fish pond pumping)
   * Other (please specify)
   * none
2. For which crops do you perform %ap\_activity\_roster%?\*
   * Carrots and turnips
   * Cashew nuts with shell
   * Cassava
   * Chillies and peppers dry
   * Chillies and peppers green
   * Cocoa beans
   * Coconuts
   * Coffee green
   * Cotton lint
   * Cottonseed
   * Cow peas dry
   * Cows milk
   * Fonio
   * Fruit citrus
   * Fruit fresh
   * Garlic
   * Other (please specify)
   * none
3. Who performs this %ap\_activity\_roster% activity in your business?\*
   * always men
   * often men
   * even mixture of men and women
   * often women
   * always women
4. To what extent is %ap\_activity\_roster% mechanized in your business?\*
   * always manually performed
   * sometimes use machine
   * often use machine
   * always use machine
5. Which of the following equipment do you use for this activity?\*
   * diesel generator
   * petrol generator
   * thresher/sheller
   * hydraulic press
   * grater/grinder
   * peeler
   * flour mill
   * rice mill
   * parboiler
   * fryer/cooker
   * dryer
   * refrigerator
   * freezer
   * bulk milk chiller
   * water pump
   * Smoker
   * Other (please specify)
6. What is the power source for this equipment?\*
   * Diesel fuel
   * Petrol fuel
   * electricity from diesel generator
   * electricity from petrol generator
   * electricity from grid or minigrid
   * manual (human) power
   * simple machine (levers, water channels
   * for irrigation, etc)
   * firewood for heat
   * other fuel for heat (please specify)
   * Other source (please specify)
7. What is the appliance power capacity? Report in kilowatts, kVA or Horsepower.
8. Select appliance capacity units.\*
   * kilowatts
   * kVA
   * Horsepower
   * Other units
9. If the equipment uses different sources of energy for different functions, please explain here (e.g. a cocoa dryer may use electricity to run control systems but burn diesel for heat)\*
10. How many hours per day do you use %ap\_equip\_roster% during the busy season?\*
11. During these %ap\_equip\_cap\_hrs\_per\_day% hours of use, what percentage (%) of the time is the appliance running?\*
12. Do you use this %ap\_equip\_roster% to process multiple crops? If yes, select all crops processed?\*
    * Carrots and turnips
    * Cashew nuts with shell
    * Cassava
    * Chillies and peppers dry
    * Chillies and peppers green
    * Cocoa beans
    * Coconuts
    * Coffee green
    * Cotton lint
    * Cottonseed
    * Cow peas dry
    * Cows milk
    * Fonio
    * Fruit citrus
    * Fruit fresh
    * Garlic
13. Please select any other inputs you need to buy to conduct %ap\_activity\_roster%.

This does not include equipment-specific costs like fuel and maintenance or raw material discussed above (e.g. purchase of cassava tuber for garri).\*

* + Please select any other inputs you need to buy to conduct
  + %ap\_activity\_roster%.
  + This does not include equipment-specific costs like fuel and
  + maintenance or raw material discussed above (e.g.
  + purchase of cassava tuber for garri).

1. How does your %ap\_activity\_roster% business work? (select all that apply)\*
   * Buy raw inputs, process them, then sell
   * final product
   * Fee for service
   * Process my own crops for home
   * consumption or to make money
2. For each machine you possess, how did you finance it?\*
3. Where did you source each of your machines from?\*
4. Where do you take the equipment whenever it needs repair?\*

[Enumerator: If this person processes only for household consumption, end the interview here and find a processor that markets their end product]

1. During this busy season, how often do you reduce processing because you do not have the energy resources you need (electricity, fuel, etc) to run your machine?\*
   * always have the energy sources I need
   * I must limit production a few days per
   * season
   * I must limit production once per week
   * I must limit production every day
   * I rarely have the energy sources I need
2. During one day of processing, what quantity of %ap\_input\_form% enters the process? (e.g. cassava root, maize grain, raw milk)\*
3. Record units for the %ap\_mass\_in% reported in the previous question.\*
   * bag
   * tonne
   * liter
   * pick-up truck
   * large trailer load
   * Other (please specify)
4. [If selected bag] What size of bag are you referring to?
5. How much does %ap\_input\_form% cost per %ap\_mass\_in\_unit%?\*
6. Do you require special quality characteristics in %ap\_input\_form%? Please describe

*For example, does cassava root need to be peeled and harvested within 2 days? Do maize grains need to be dried a certain amount?*

1. During this busy season, how often do you reduce processing because you cannot source enough quality input?\*
   * I always have enough good quality input
   * I must limit production a few days per
   * season
   * I must limit production once per week
   * I must limit production every day
   * I rarely have enough good quality input
2. For fee-for-service processing, how much do you charge for one %ap\_mass\_in\_unit% of %ap\_input\_form% for %ap\_activity\_roster%?\*
3. During one day of processing, how much %ap\_output\_form% exits the process?\*
4. Record units for the %ap\_mass\_in% reported in the previous question.\*
   * bag
   * tonne
   * liter
   * pick-up truck
   * large trailer load
   * Other (please specify)
5. [If selected bag] What size of bag are you referring to?
6. How many days per week do you perform %ap\_activity\_roster%?\*
7. During the busy period (harvest season), how many days per week do you perform %ap\_activity\_roster%?\*
8. How much money do you make during a busy week?\*
9. What percentage (%) of %ap\_product\_form% is consumed by your household?\*
10. What percentage (%) of %ap\_product\_form% is lost to spoilage?\*
11. What percentage (%) of %ap\_product\_form% is sold?\*
12. Do you know what change could reduce these losses? If so, please describe.\*
13. What is preventing these changes from happening and reducing spoilage?
14. What is limiting your ability to grow your processing capacity for the activities we've discussed? Choose the following in order of importance:\*
    * Access to financing (loans)
    * Lack of market access (can't sell more
    * that I already do)
    * Lack of know-how or experience (e.g.
    * needs further education)
    * Lack of reliable electricity for machines
    * (currently owned or not)
    * Other (please specify)
15. Do you use sun or open-air drying for any of your processed products?\*
    * No, I always use a mechanical dryer
    * Yes, I use open-air drying at least some
    * of the time
16. How frequently do you experience drying problems during the busy season?\*
    * never
    * one or two days per season
    * three to ten days per season
    * ten to twenty days per season
    * air-dry my crops during the busy season
17. Are there other opportunities to increase your earnings that you are not currently able to do? These can be expansion of the activities we discussed or new business ideas.\*

If so, please list up to 3 that you would seriously consider

1. What is limiting your ability to do these other activities that you aren't already doing? Choose the following in order of importance:\*
   * Access to financing (loans)
   * Lack of market access (can't sell more
   * that I already do)
   * Lack of know-how or experience (e.g.
   * needs further education)
   * Lack of reliable electricity for machines
   * (currently owned or not)
   * Other
2. Estimate the number of processors doing %ap\_activity\_roster% within %community\_name%.\*
3. Are there markets nearby?\*
   * Yes, monthly
   * Yes, weekly
   * No
4. For each of the principal goods you produce, how much more could offtakers realistically purchase if supply increased?\*

## 

# **Offtaker Survey Questions**

## Community location questions

1. Enumerator\*
   * Select from list of enumerators
2. Communitysite name\*
   * Select from list of sites

| [EUMERATOR: Please Show ID card to the facility member and request to meet the head of the facility. If the facility head is not available, ask for an adult facility employee who has full knowledge about the business.] |
| --- |

## Respondent questions

1. For our study, a trader is someone who buys agricultural products from one entity, and then sells to another at a higher price, without conducting any value-added processes in-between. Do you engage in this kind of trading?\*
   * Yes
   * No

[If no] End interview

1. [If yes] Do you consent to be interviewed for the purposes of this study and to have photos taken of yourself and your farm or business, where applicable?\*
   * Yes
   * No

[If No] Record the reason from the following and abort the survey

1. [If Yes] Full name of respondent\*
2. Gender of respondent\*
   * Male
   * Female
   * Diverse
3. Where do you conduct your trading?\*
   * In the market in this community
   * In the market in another community
   * With middlemen who visit this
   * community
   * I conduct my trading outside of this
   * community
4. Is this interview being conducted where trading occurs?\*
   * Yes
   * No
5. If this is the site where trading takes place, record GPS coordinates:\*
6. If this interview is not conducted where processing takes place, how many minutes would it take to walk there from the city center?\*
   * 1 - 15 minutes
   * 15 - 30 minutes
   * 30 - 45 minutes
   * more than 45 minutes
7. Which of the following describe the respondent's relationship to the enterprise?\*
   * Owner
   * Employee or manager (not owner)
   * Other
8. Respondent phone number

## Off-take profile questions

1. Which of the following are major crops that you trade? (Choose a maximum of 2)\*
   * Cassava
   * Maize
   * Rice
   * Sorghum
   * Cowpea
   * Soybean
   * Cashew
   * Sheanut
   * Cotton
   * Cocoa
   * farmed fish
   * Milk
   * Other (please specify)
2. Throughout the year, how much %t\_crop\_roster% do you trade per week?\*
3. What month does the first busy trading season start?\*
4. What month does the first busy trading season end?\*
5. What month does the second busy trading season start?\*
6. What month does the second busy trading season end?\*
7. During the second busy season, how much %t\_crop\_roster% do you trade per week?\*
8. Record units for the trade volumes reported\*
   * kilogram
   * bag
   * tonne
   * liter
   * pick-up truck
   * large trailer load
   * other
9. If Naira/bag, what size of bag are you referring to?
10. How many days do you typically need to store %t\_crop\_roster% before sale?\*

If less than a whole day, use fractions like 0.25 or 0.5 to report quarter or half days

of storage.

1. Of the %t\_tradevol% %t\_buy\_units%s of %t\_crop\_roster% you trade per week, how many %t\_buy\_units%s is spoiled in your possession before it can be sold to the next buyer?\*
2. How do you store the purchased %t\_crop\_roster% before sale?\*
3. What change could reduce these losses to spoilage?
4. What are the main forms in which you sell %t\_crop\_roster%? Maximum of three (3) answers\*

## 

## Product sale questions

1. From whom do you buy %t\_product\_roster% ?\*
   * smallholder farmers (<2 ha land)
   * medium to large farmers (>2 ha land)
   * small agric processors
   * cottage industry processors
   * other traders/middlemen
2. Low end of purchase price for %t\_product\_roster%\*
3. High end of purchase price for %t\_product\_roster%\*
4. Record units for the %t\_purchase\_price\_high% reported in the previous question. Naira per…\*
   * kilogram
   * bag
   * tonne
   * liter
   * pick-up truck
   * large trailer load
   * other
5. If Naira/bag, what size of bag are you referring to?
6. What percentage of your purchased %t\_product\_roster% is bought from community members?\*
7. Who do you sell %t\_product\_roster% to?\*
   * small agric processors
   * cottage industry processors
   * other traders/middlemen
   * consumers/households
8. Low end of sale price range:\*
9. High end of sale price range:\*
10. What percentage (%) of your purchased %t\_product\_roster% is sold to members of %community\_name%\*
11. What is your offtake size preference?\*
    * 100 kg bag size
    * 50 kg bag size
    * 25 kg bag size
    * 10 kg bag size
    * 1 kg bag size
    * pick-up load
    * large trailer load

1. Scarlett Santana, Andrew Allee, Zihe Meng, Wayne Omonuwa, James Sherwood, Balaji MK, & Kira Rosi-Schumacher (2020). *Agricultural Productive Use Stimulation in Nigeria: Value Chain & Mini-Grid Feasibility Study*. Rocky Mountain Institute, Deloitte Consulting LLP. Prepared for the U.S. Agency for International Development Power Africa Nigeria Power Sector Program.<https://pdf.usaid.gov/pdf_docs/PA00WQX4.pdf>. [↑](#footnote-ref-0)